# FRANKLIN DOMESTIC WATER USERS (PWS #4010064)
# SOURCE WATER ASSESSMENT FINAL REPORT

**January 4, 2002**

## State of Idaho
## Department of Environmental Quality

## Executive Summary

Under the federal Safe Drinking Water Act Amendments of 1996, all states are required by the U.S. Environmental Protection Agency (EPA) to assess every source of public drinking water for its relative sensitivity to contaminants regulated by the act. The assessment for your particular system is based on a land use inventory of the designated source water area, sensitivity factors associated with each well, and characteristics of the aquifer that supplies your community with drinking water.

This report, *Source Water Assessment for the Franklin Domestic Water Users, located in Boise, Idaho*, describes the public drinking water system, the boundaries of the zones of water contribution, and the associated potential contaminant sources located within those boundaries. This assessment should be used as a planning tool, taken into account with local knowledge and concerns, to develop and implement appropriate protection measures for this source. **The results should not be used as an absolute measure of risk and they should not be used to undermine public confidence in the water system.**

The Franklin Domestic Water Users (PWS #4010064) drinking water system consists of two wells. Well #1 serves as the main drinking water supply and Well #2 is a backup, which is only used during periods of peak demand. These two wells are located approximately 25 feet apart, so for the purposes of the susceptibility analysis, the delineated drinking water capture zones were combined into one all-encompassing region (Figures 2a & 2b, pages 19-20).

Well #1 rated an overall moderate susceptibility to inorganic compounds (IOCs), volatile organic compounds (VOCs), synthetic organic compounds (SOCs), and microbial contaminants. These ratings are due, in large part, to the hydrologic characteristics of the area. Regional soil information indicates the presence of moderate to well-drained surface soils in the vicinity of the Franklin Domestic Water Users water system. These soils may offer less protection to the ground water, as they allow for a more rapid downward transport of pollutants in the unlikely event of a spill or release near the wellhead. Additionally, the depth to first ground water is relatively shallow at just 35 feet below ground surface.

Well #2 scored an overall high susceptibility for IOCs, VOCs, and SOCs, and a moderate susceptibility for microbial contaminants. These ratings increased because a well log was not available for Well #2. Therefore, valuable information regarding the well seal, casing properties, well production intervals, and specific hydrologic conditions are not known. As a result, the elevated scores for Well #2 are somewhat conservative.

Although contaminant levels in the drinking water system have never exceeded current maximum contaminant levels (MCLs) for any of the pollutants regulated under the Safe Drinking Water Act, the Franklin Domestic Water Users should be aware that the potential for contamination still exists. The delineated source water area resides within an area of various urban and commercial land uses. Furthermore, the wells are located within an Idaho Department of Environmental Quality (DEQ) designated Group 1 Priority Area for nitrates and the synthetic pesticides atrazine and alachlor. Nevertheless, routine water samples tested for nitrate have never exceeded 2.0 milligrams per liter (mg/L), and neither atrazine nor alachlor have ever been detected in the water system.

This assessment should be used as a basis for determining appropriate new protection measures or re-evaluating existing protection efforts. No matter what ranking a source receives, protection is always important. Whether the source is currently located in a "pristine" area or an area with numerous industrial and/or agricultural land uses that require surveillance, the way to ensure good water quality in the future is to act now to protect valuable water supply resources.

For the Franklin Domestic Water Users, drinking water protection activities should first focus on continued maintenance of both sanitary well seals and the distribution system. Actions should also be taken to clear all possible contamination sites within a 50-foot radius circle around each wellhead. If the system should need to expand in the future, new well sites should be located in areas with as few potential sources of contamination as possible, and the site should be reserved and protected solely for this specific use.

Any spills occurring on Interstate 84 should be monitored and dealt with expeditiously, as they could impact the system. In addition, land uses within a substantial portion of the source water assessment area are beyond the direct jurisdiction of the Franklin Domestic Water Users. Therefore, partnerships with state and local agencies should be established to ensure future land uses within the delineated capture zone are protective of ground water quality.

Due to the time involved with the movement of ground water, drinking water protection activities should be aimed at long-term management strategies even though these strategies may not yield results in the near term. A strong public education program should be the primary focus of any drinking water protection plan, especially since the delineation contains both urban and residential land uses. Public education topics could include proper lawn care practices, household hazardous waste disposal methods, and the importance of water conservation to name but a few.

There are multiple resources available to help communities implement protection programs, including the Drinking Water Academy of the U.S. Environmental Protection Agency. In addition, because a major transportation corridor (Interstate 84) passes through the delineation, the Idaho Department of Transportation should be involved in any protection measures. Drinking water protection practices dealing with agriculture should be coordinated with the Idaho State Department of Agriculture, the Soil Conservation Commission, the Ada County Soil Conservation District, and the Natural Resources Conservation Service.

A community should incorporate a variety of strategies in order to develop a comprehensive drinking water protection plan, be they regulatory in nature (i.e. zoning, permitting) or non-regulatory in nature (i.e. good housekeeping, public education, water conservation, specific best management practices). For assistance in developing protection strategies please contact the Boise Regional Office of the Idaho Department of Environmental Quality at 373-0550 or the Idaho Rural Water Association at 1-800-962-3257.

# SOURCE WATER ASSESSMENT FOR THE FRANKLIN DOMESTIC WATER USERS, BOISE, IDAHO

## Section 1. Introduction - Basis for Assessment

The following sections contain information necessary to understand how and why this assessment was conducted. **It is important to review this information to understand what the ranking of this assessment means.** A map showing the delineated source water assessment area and the inventory of significant potential sources of contamination identified within that area are contained in this report (Attachment A, pages 17-20). The list of significant potential contaminant source categories and their rankings used to develop the assessment is also attached.

### Level of Accuracy and Purpose of the Assessment

The Idaho Department of Environmental Quality (DEQ) is required by the U.S. Environmental Protection Agency (EPA) to assess each drinking water source in Idaho for their relative susceptibility to contaminants regulated by the Safe Drinking Water Act Amendments of 1996. This assessment is based on a land use inventory of the delineated source water area, sensitivity factors associated with each well, and aquifer characteristics. Since there are over 2,900 public water sources in Idaho, there is limited time and resources available to accomplish each evaluation. All of the assessments must be completed by May of 2003. An in-depth, site-specific investigation of each significant potential source of contamination is not possible. **Therefore, this assessment should be used as a planning tool, taken into account with local knowledge and concerns, to develop and implement appropriate protection measures for this source. The results should <u>not be</u> used as an absolute measure of risk and they should <u>not be</u> used to undermine public confidence in the water system.**

The ultimate goal of the assessment is to provide data to local communities to develop a protection strategy for their drinking water supply system. DEQ recognizes that pollution prevention activities generally require less time and money to implement than treatment of a public water supply system once it has been contaminated. DEQ encourages communities to balance resource protection with economic growth and development. The decision as to the amount and types of information necessary to develop a drinking water protection program should be determined by the local community based on its own needs and limitations. Drinking water protection is one facet of a comprehensive growth plan, and it can complement ongoing local planning efforts.

## Section 2. Conducting the Assessment

### General Description of the Source Water Quality

The Franklin Domestic Water Users have a community public drinking water system serving approximately 75 people that is located just south of the intersection of Franklin Road and Five Mile Road in Boise, Idaho (Figure 1, page 18). Residents receive their water from two wells. The wells are located in very close proximity to one another, so for the purposes of the susceptibility analysis, the designated drinking water capture zones for each well were combined into one region (Figures 2a & 2b, pages 19-20).

There have been no water chemistry problems in the history of this system, although the IOCs arsenic, barium, fluoride, and nitrate have been detected at concentrations below each respective maximum contaminant level (MCL) set by the EPA. Nitrate levels have never exceeded 2.0 mg/L, in no way approaching the MCL of 10 mg/L. Additionally, total coliform bacteria have not been discovered in routine water samples since an isolated incident occurred in 1981. The Franklin Domestic Water Users water system is nearly twenty years old, but well maintained, so it has continually delivered high quality drinking water to its residents.

**Defining the Zones of Contribution – Delineation**

The delineation process establishes the physical area around a well that will become the focal point of the assessment. The process includes mapping the boundaries of the zone of contribution into time-of-travel (TOT) zones (regions indicating the number of years necessary for a particle of water to reach a pumping well) for water in the aquifer. DEQ contracted with BARR Engineering to perform the delineations using a combination of MODFLOW and a refined analytical element computer model approved by the EPA in determining the 3-year (Zone 1B), 6-year (Zone 2), and 10-year (Zone 3) TOT for water associated with the Boise Valley aquifer. The computer model used site specific data, assimilated by BARR Engineering from a variety of sources including the Franklin Domestic Water Users well log, in addition to other area well logs, the Treasure Valley Hydrologic Project, and hydrogeologic reports (detailed below in Section 3).

**Identifying Potential Sources of Contamination**

A potential source of contamination is defined as any facility or activity that stores, uses, or produces, as a product or by-product, the contaminants regulated under the Safe Drinking Water Act and has a sufficient likelihood of releasing such contaminants at levels that could pose a concern relative to drinking water sources. The goal of the inventory process is to locate and describe those facilities, land uses, and environmental conditions that are potential sources of ground water contamination. The locations of potential sources of contamination within the delineation areas were obtained by field surveys conducted by DEQ and from available databases.

It is important to understand that a release may never occur from a potential source of contamination provided best management practices are used at the facility. Many potential sources of contamination are regulated at the federal level, state level, or both to reduce the risk of release. Therefore, when a business, facility, or property is identified as a potential contaminant source, this should not be interpreted to mean that this business, facility, or property is in violation of any local, state, or federal environmental law or regulation. What it does mean is that the potential for contamination exists due to the nature of the business, industry, or operation. There are a number of methods that water systems can use to work cooperatively with these possible contamination sources, including educational visits and inspections of stored materials. Many owners of such facilities may not even be aware that they are located near a public water supply well.

**Contaminant Source Inventory Process**

A two-phased contaminant inventory of the study area was conducted in October of 2001. The first phase involved identifying and documenting potential contaminant sources within the Franklin Domestic Water Users source water assessment area (Figures 2a & 2b, pages 19-20) through the use of computer databases and Geographic Information System maps developed by DEQ. The second, or enhanced, phase of the contaminant inventory involved contacting the system operator, Marvin Sparrell, to validate the sources identified in phase one and to add any additional potential sources in the region.

The delineated source water area contains over 75 potential contaminant sources. The majority of these sites are located in the 10-year TOT zone that collects ground water from the southern Boise region. Within the 3-year TOT capture zone, the most significant potential contaminant source is Interstate 84, which serves as an important transportation thoroughfare for the region. Because I-84 is positioned approximately one mile south of the two wells, the unlikely event of a spill or release of contaminants on the freeway should be monitored closely to ensure prompt cleanup. In addition, the 1995 Ground Water Under Direct Influence (GWUDI) field survey performed by the Central District Health Department indicates the presence of a storm drain and sewer line approximately 170 feet from Well #1. For the purposes of the susceptibility analysis, both the sewer line and the storm drain were considered possible origins of ground water pollution. Each potential contaminant source and the class of contaminants stored at each site can be found in Table 3.

## Section 3. Hydrologic Conditions of the Treasure Valley

**Treasure Valley Hydrologic Project Information (Petrich and Urban, 1996; Neely and Crockett, 1998; Petrich et al., 1999)**

The "Treasure Valley" is a geopolitical region that includes the lower Boise River sub-basin. The lower Boise River sub-basin begins where the Boise River exits the mountains near the Lucky Peak Reservoir. From Lucky Peak Dam the lower Boise River flows about 64 (river) miles northwestward through the Treasure Valley to its confluence with the Snake River. The Treasure Valley Hydrologic Project area encompasses the lower Boise River area, and extends south to the Snake River. The southern area is included in the study area because of ground water flow from the Lower Boise River basin south toward the Snake River.

Significant amounts of desert area were converted to flood irrigated agriculture beginning in the 1860s. Irrigation led to increases in shallow ground water levels in some regions. These shallow ground water levels provided an inexpensive and readily obtainable source of water supply that is used extensively throughout the valley. Much of the population growth in the Treasure Valley has been occurring in previously flood-irrigated agricultural areas, resulting in increased pumpage and a reduction in local aquifer recharge. In addition, irrigation in some areas has become more efficient, reducing the amount of irrigation-related infiltration. Decreasing aquifer recharge and increasing pumpage is thought to be contributing to the decline of ground water levels in some areas.

The Treasure Valley experiences a temperate and arid-to-semiarid climate. Average high temperatures range from about 90°F in summer to 36°F in winter; low temperatures range from about 20°F in winter to about 56°F in summer. The average annual precipitation ranges from about 8 to 14 inches throughout most of the valley, most of which falls during the colder months in the form of snow in higher elevations and rain in the low-lying valleys.

Major surface water bodies include the Boise River, Lake Lowell, and Lucky Peak Reservoir. The primary source of surface water in the Treasure Valley is the high elevation area in the Boise River basin upstream of Lucky Peak Dam. Much of the spring runoff from the snow pack in high elevation areas is stored in three reservoirs: Anderson Ranch Reservoir, Arrowrock Reservoir, and Lucky Peak Reservoir.

Regional cropland is irrigated primarily with surface water through an extensive network of reservoirs and canals. The first canals were constructed in the 1860's; there are now over 1,100 miles of major and intermediate canals in the Treasure Valley, the majority of which are owned and maintained by canal companies and irrigation districts. Primary sources of irrigation water in the Treasure Valley include the Boise, Snake, and Payette Rivers.

**Hydrogeology (from Petrich et al., 1999)**

The lower Boise River sub-basin (Treasure Valley) is located within the northwest- trending topographic depression known as the western Snake River Plain. The western Snake River Plain is a relatively flat lowland separating Cretaceous granitic mountains of west-central Idaho from the granitic/volcanic Owyhee mountains in southwestern Idaho. The western Snake River Plain extends from about Twin Falls, Idaho northwestward to Vale, Oregon. The Snake River Plain is about 30 miles wide in the section containing the lower Boise River.

Historically, sediments originating from the surrounding mountains began accumulating on top of thick, basal basalts. Rifting and continued subsidence maintained the lowland topography, leading to the additional accumulation of water and sediments (Othberg, 1994). Basin infilling by sediments and basalt occurred from the late Miocene through the late Pliocene (Othberg, 1994). Incision caused by flowing water in major drainages (e.g., Snake and Boise Rivers) began in the late Pliocene or early Pleistocene, although deposition of coarse sediments continued during Quaternary glaciations (Othberg, 1994).

Several Quaternary basalt flows have been described in the western Snake River Plain, and have been assigned to the upper Snake River Group (Malde, 1991; Malde and Powers, 1962). Lava flowed across portions of the ancestral Snake River Valley (Malde, 1991) in an area that is now south of the Boise River. The Snake River then changed course, incising at its present location along the southern margin of the basalt flows. More recent eruptions (from Kuna Butte and other local sources) spilled lava into the canyon south of Melba. The Snake River has since incised this basalt (Malde, 1991).

The general stratigraphy of the western Snake River Plain consists of (from top to bottom) a thick layer of sedimentary deposits underlain by a thick series of basalt flows, which in turn are underlain by older, tuffaceous sediments and basalt (Malde, 1991; Clemens, 1993). The upper thick zone of sediments (up to approximately 6,000 feet thick) distinguishes the western Snake River Plain from the eastern Snake River Plain, in which the upper section is primarily Quaternary basalt (Wood and Anderson, 1981).

The uppermost sediments and basalt belong to the Pleistocene-age Snake River Group. The Snake

River Group consists of terrace sediments, Quaternary alluvium, and Pleistocene basalt flows (Wood and Anderson, 1981). Snake River Group sediments and basalts cover much of the project area (Othberg and Stanford, 1992).

The Snake River Group overlies the Idaho Group sediments. The Idaho Group sediments can be divided into two general parts (Wood and Anderson, 1981). The lower Idaho Group contains sediments described as lake and stream deposits of buff white, brown, and gray sand, silt, clay, diatomite, numerous thin beds of vitric ash, and some basaltic tuffs. The upper part of the lower Idaho Group also contains some local, thin, basalt flows. The upper Idaho Group consists of sands, claystones, and siltstones, but differs from the lower Idaho Group in that it contains a greater percentage of coarser-grained materials. The upper Idaho Group sediments are associated with a fluvial/deltaic/lacustrine depositional environment; the lower Idaho Group sediments were deposited in more of a lacustrine/deltaic environment (Wood, 1994).

Wood (1994) identified a buried lacustrine delta within the Idaho Group sediments in the Nampa-Caldwell area. The location of the delta in the middle of the western Snake River Plain suggests that the eastern part of the Boise River basin was delta plain and flood plain at the time of deposition, while the western part was a deep lake environment. The delta probably prograded northwestward into a lake basin 830 feet deep, based upon high resolution seismic reflection data and resistivity log interpretations. The delta-plain and front sediments were shown to be mostly fine-grained, well-sorted sand with thin layers of mud (Wood, 1994). The northwest trend of the delta indicates a sediment source to the southeast, such as where the Snake River flows today (Wood, 1994).

A substantial, laterally extensive layer of clay is found at depths of 300 to 700 feet below ground surface. The clay is important because it represents, in some areas, a significant aquitard separating shallow overlying aquifers from deeper zones. The clay, often described in well logs as having a blue or gray color, has been observed as far west as Parma, and as far east as Boise (although the clay is not found in the extreme eastern portions of the Treasure Valley). The clay varies from a few feet to a few hundred feet in thickness. Although significant layers of clay are present throughout the Idaho Group sediments, individual clay units are not necessarily continuous over large areas. Also, the top of the clay can vary in elevation by up to approximately 200 feet in some locations, such as in an area west of Lake Lowell. In general, sediments above the "blue clay" are coarser-grained than the interbedded sands, silts, and clays underlying the "blue clay."

The top of the upper Idaho Group is marked in several parts of the Treasure Valley by a widespread fluvial gravel deposit known as the Tenmile Gravels. Tenmile Gravels contain rounded granitic rocks and felsic porphyries originating from the Idaho Batholith to the north and northeast. The Tenmile gravels range up to 500 feet in thickness along the Tenmile Ridge south of Boise, but are less than 50 feet thick in the Nampa-Caldwell area (Wood and Anderson, 1981).

**Aquifer Systems and Hydrogeologic Characteristics**

Ground water for municipal, industrial, rural domestic, and irrigation uses in the Treasure Valley is drawn almost entirely from Snake River Group and Idaho Group aquifers. Many domestic wells draw water from shallow aquifers, such as those in the Snake River Group deposits. Larger production wells (for municipal and agricultural uses) draw water from the deeper Idaho Group sediments.

Aquifers contained in the Snake River and Idaho Group sediments comprise shallow and regional ground water flow systems. Shallow aquifers contained in Snake River Group sediments and basalts may belong to local flow systems. Most local flow system recharge stems from irrigation infiltration and channel (e.g., streams or canals) losses. Discharge from shallow, local flow systems often is to local drains or streams. The time from recharge to discharge in shallow flow systems (residence times) probably ranges from days to tens of years.

In contrast, regional ground water flow systems extend much deeper than local flow systems. The Treasure Valley regional flow system begins in the eastern part of the valley, as indicated by downward hydraulic gradients in the Boise Fan sediments (Squires et al., 1992). Some water also enters the regional flow system as underflow from the Boise Foothills in the northeastern part of the valley. The regional flow system is thought to discharge primarily to the Boise and Snake Rivers in the western and southwestern parts of the valley.

Aquifer material characteristics, material heterogeneity, and structural controls influence Treasure Valley ground water flow. Coarse-grained materials (e.g., sand and gravel) in upper zones are more capable of transmitting ground water than fine-grained sediments (e.g., silt and clay). Clay and silt in the Snake River sediments can restrict vertical and/or horizontal ground water movement. Perched aquifers are created when fine-grained lenses impede downward vertical flow. A distinctive clay layer, sometimes referred to as "blue clay," is present over large portions of the valley. The clay is absent in the easternmost portions of the lower Boise River Basin, but can reach a thickness of more than 200 feet toward the central and western portions of the basin.

Sequences of interbedded sand, silt, and clay, such as the Deer Flat Surface and the upper portion of the Glenns Ferry Formation of the upper Idaho Group in the Nampa-Caldwell area, are the major water-producing aquifers in a large part of Canyon County (Anderson and Wood, 1981). The coarse-grained sediments in this zone produce water in excess of 2,000 gallons per minute (gpm).

The delineated source water assessment area for the Franklin Domestic Water Users can best be described as a southeastward trending corridor approximately 3½ miles long and ¾ mile wide (Figures 2a & 2b, pages 19-20). The actual data used by BARR Engineering in determining the source water zones of contribution are available from DEQ upon request.

## Section 3. Susceptibility Analyses

The water system's susceptibility to contamination was ranked as high, moderate, or low risk according to the following considerations: hydrologic characteristics, physical integrity of the well, land use characteristics, and potentially significant contaminant sources. The susceptibility rankings are specific to a particular potential contaminant or category of contaminants. Therefore, a high susceptibility rating relative to one potential contaminant does not mean that the water system is at the same risk for all other potential contaminants. The relative ranking that is derived for each well is a qualitative, screening-level step that, in many cases, uses generalized assumptions and best professional judgement. Attachment B (page 23) contains the susceptibility analysis worksheets. The following summaries describe the rationale for the susceptibility ranking.

### Hydrologic Sensitivity

The hydrologic sensitivity of a well is dependent upon four factors: 1) the surface soil composition, 2) the material in the vadose zone (region between the land surface and the water table), 3) the depth to first ground water, and 4) the presence of a 50-foot thick impermeable zone above the production interval of the well.

For the Franklin Domestic Water Users water system, regional soil information indicates the presence of moderate to well-drained surface soils in the vicinity of the two wells. These soil types offer less protection to the system because they may allow contaminants on the ground surface to more rapidly penetrate the vadose zone, and potentially reach the aquifer. However, according to the well log for Well #1, there are several narrow (cumulatively about 30 feet thick) layers of clay that may help retard downward contaminant transport below ground surface (bgs). The static water level, however, is only 35 feet bgs, so any pollutant spills or releases in the vicinity of either well bore need to be monitored and/or remediated expeditiously. All of these factors were taken into account, and the system was assigned a high hydrologic sensitivity score (Table 2, page 11), mainly due to the soil properties and the relatively high water table.

### Well Construction

Well construction directly affects the ability of the well to protect the aquifer from contaminants. System construction scores are reduced when information shows that potential contaminants will have a more difficult time reaching the intake of the well. Lower scores imply a system is less vulnerable to contamination. For example, if the well casing and annular seal both extend into a low permeability unit, then the possibility of contamination is reduced and the system construction score goes down. If the highest production interval of the well is more than 100 feet below the water table, then the system is considered to have a better buffering capacity. In addition, if the wellhead and surface seal are maintained to standards, as outlined in sanitary surveys, then contamination down the well bore is less probable. Also, if the wellhead is protected from surface flooding and is outside the 100-year floodplain, then the likelihood of contamination from surface events is reduced.

A 1999 Sanitary Survey conducted by the Central District Health Department showed that the wells were in compliance with all wellhead and surface seal requirements. Additionally, a well log was available for Well #1 and the information it provided is summarized below in Table 1.

**Table 1. Franklin Domestic Water Users Well Construction Summary Information**

| Well | Well Depth (ft) | Static Water Depth (ft) | Casing: diameter/ thickness (in) | Casing: Depth (ft)/ formation completed in | Surface seal: depth (ft)/ formation completed in | Screened Interval (ft) | Drill Year | Sanitary Survey Elements (A/B) [1] |
|---|---|---|---|---|---|---|---|---|
| Well #1 | 268 | 35 | 8/0.225 to 202ft<br>6/0.25 to 253ft. | 253/Blue clay | 55/Sand & Gravel | 205-215,<br>216-223,<br>223-229 | 1981 | Y/Y |

**[1] A = Well and surface seal in compliance; B = Protected from surface flooding**
**NI = no information was available**

The well log allowed a determination as to whether the well meets current public water system (PWS) construction standards. Although the well may have been in compliance with all regulations when it was completed, current PWS well construction standards are more stringent. The Idaho Department of Water Resources *Well Construction Standards Rules* (1993) require all PWSs to follow DEQ standards as well. IDAPA 58.01.08.550 requires that PWSs follow the *Recommended Standards for Water Works* (1997) during construction. Some of the regulations deal with screening requirements, aquifer pump tests, and thickness of casing. Table 1 of the *Recommended Standards for Water Works* (1997) lists the required steel casing thickness for various diameter wells. Eight-inch diameter wells require a casing thickness of 0.322-inches. Well #1 used 0.225-inch thick 8-inch casing and therefore does not comply with the current construction standards.

A well log for Well #2 (backup) was not available and therefore the intricacies of the well are not known. As a result, the high well construction score for Well #2 is somewhat conservative.

**Potential Contaminant Source and Land Use**

In terms of the total potential contaminant source/land use score, both wells rated moderate for IOCs such as nitrates and arsenic, VOCs including petroleum products, and SOCs such as pesticides, and low for microbial contaminants including bacteria. Urban and commercial land uses in the designated source water area accounted for a significant contribution to the potential contaminant inventory ratings (Table 2, page 12). A lack of potential sources, other than Interstate 84 and the storm drain in the 3-year TOT is the primary reason for the reduced scores. However, the wells do reside within Group 1 Priority Areas, designated by DEQ, for nitrates and the pesticides atrazine and alachlor. Because these compounds all possess the ability to leach downward through the vadose zone, DEQ considers these regions to be increasingly vulnerable to ground water contamination. Even so, nitrate levels have never exceeded 2 mg/L in samples taken from the well, and the two aforementioned pesticides have never been detected at any measurable level.

**Final Susceptibility Ranking**

A detection above a drinking water standard MCL, any detection of a VOC or SOC, or a repeat detection of total coliform bacteria or fecal coliform bacteria at the wellhead will automatically give a high susceptibility rating to a well despite the land use of the area because a pathway for contamination already exists. Additionally, potential contaminant sources within 50 feet of a wellhead will lead to an automatically high susceptibility rating. Hydrologic sensitivity and system construction scores are heavily weighted in the final scores. Having multiple potential contaminant sources in the 0- to 3-year time of travel zone (Zone 1B) and the presence of agricultural land contribute greatly to the overall ranking.

For the Franklin Domestic Water Users, Well #1 was determined to be moderately susceptible to IOC, VOC, SOC, and microbial contaminants. The overall ratings would have decreased significantly, if it were not for the high hydrologic sensitivity score.

For Well #2, the system rated an overall high susceptibility to IOCs, VOCs, and SOCs, and moderate for microbial pollutants. These increased rankings can be credited to an elevated well construction score for Well #2 because a well log could not be obtained by DEQ. As a result, valuable information regarding the well seal, casing properties, well production intervals, and specific hydrologic conditions could not be integrated into the susceptibility analysis.

**Table 2. Summary of the Franklin Domestic Water Users Susceptibility Evaluation**

| Well | Susceptibility Scores[1] | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | Hydrologic Sensitivity | Contaminant Inventory | | | | System Construction | Final Susceptibility Ranking | | | |
| | | IOC | VOC | SOC | Microbials | | IOC | VOC | SOC | Microbials |
| Well #1 | H | M | M | M | L | M | M | M | M | M |
| Well #2 | H | M | M | M | L | H | H | H | H | M |

**[1]H = High Susceptibility, M = Moderate Susceptibility, L = Low Susceptibility,**
**IOC = inorganic chemical, VOC = volatile organic chemical, SOC = synthetic organic chemical**

**Susceptibility Summary**

A high hydrologic sensitivity and moderate system construction score combined to give Well #1 a moderate overall rating for all classes of pollutants, even though few potential contaminant sources exist in the 3-year TOT zone. For Well #2, a high system construction score tended to increase the ratings, resulting in a high susceptibility to IOCs, VOCs, and SOCs (Table 2). There have been no significant water chemistry problems in the ground water. However, the delineated source water area does reside in an area of various urban and commercial land uses. Furthermore, the wells are located within DEQ designated Group 1 Priority Areas for nitrates and the pesticides atrazine and alachlor. Nevertheless, routine water samples tested for nitrate have never exceeded 2.0 mg/L, and neither atrazine nor alachlor have ever been detected in the water system.

## Section 5. Options for Drinking Water Protection

The susceptibility assessment should be used as a basis for determining appropriate new protection measures or re-evaluating existing protection efforts. No matter what the susceptibility ranking a source receives, protection is always important. Whether the source is currently located in a "pristine" area or an area with numerous industrial and/or agricultural land uses that require surveillance, the way to ensure good water quality in the future is to act now to protect valuable water supply resources.

An effective drinking water protection program is tailored to the particular local community needs and concerns. A community with a fully developed drinking water protection program will incorporate many strategies. For the Franklin Domestic Water Users, drinking water protection activities should first focus on continued maintenance of both sanitary well seals and the distribution system. Actions should also be taken to keep a 50-foot radius circle clear around each wellhead.

Any spills occurring on Interstate 84 should be monitored and dealt with expeditiously, since they could possibly impact the system. In addition, because a large portion of the ground water capture zone is outside the direct jurisdiction of the Franklin Domestic Water Users, the creation of partnerships with state and local agencies and industry groups are critical to the success of drinking water protection.

Due to the time involved with the movement of ground water, drinking water protection activities should be aimed at long-term management strategies even though these strategies may not yield results in the near term. A strong public education program should be a primary focus of any drinking water protection plan, especially since the delineation contains some urban and residential land uses. Public education topics could include proper lawn care practices, household hazardous waste disposal methods, and the importance of water conservation to name but a few.

There are multiple resources available to help communities implement protection programs, including the Drinking Water Academy of the U.S. Environmental Protection Agency. In addition, because a major transportation corridor (Interstate 84) passes through the delineation, the Idaho Department of Transportation should be involved in any protection measures. Drinking water protection practices dealing with agriculture should be coordinated with the Idaho State Department of Agriculture, the Soil Conservation Commission, the Ada County Soil Conservation District, and the Natural Resources Conservation Service.

A community must incorporate a variety of strategies in order to develop a comprehensive drinking water protection plan, be they regulatory in nature (i.e. zoning, permitting) or non-regulatory in nature (i.e. good housekeeping, public education, specific best management practices). For assistance in developing protection strategies please contact the Boise Regional Office of the Idaho Department of Environmental Quality or the Idaho Rural Water Association.

**Assistance**

Public water supplies and others may call the following DEQ offices with questions about this assessment and to request assistance with developing and implementing a local protection plan. In addition, draft protection plans may be submitted to the DEQ office for preliminary review and comments.

| | |
|---|---|
| Boise Regional DEQ Office | (208) 373-0550 |
| State DEQ Office | (208) 373-0502 |

Website: http://www2.state.id.us/deq

Water suppliers serving fewer than 10,000 persons may contact John Bokor, Idaho Rural Water Association, at 1-800-962-3257 for assistance with wellhead protection strategies.

# POTENTIAL CONTAMINANT INVENTORY
# LIST OF ACRONYMS AND DEFINITIONS

**AST (Aboveground Storage Tanks)** – Sites with aboveground storage tanks.

**Business Mailing List** – This list contains potential contaminant sites identified through a yellow pages database search of standard industry codes (SIC).

**CERCLIS** – This includes sites considered for listing under the **Comprehensive Environmental Response Compensation and Liability Act (CERCLA)**. CERCLA, more commonly known as ASuperfund≅ is designed to clean up hazardous waste sites that are on the national priority list (NPL).

**Cyanide Site** – DEQ permitted and known historical sites/facilities using cyanide.

**Dairy** – Sites included in the primary contaminant source inventory represent those facilities regulated by Idaho State Department of Agriculture (ISDA) and may range from a few head to several thousand head of milking cows.

**Deep Injection Well** – Injection wells regulated under the Idaho Department of Water Resources generally for the disposal of stormwater runoff or agricultural field drainage.

**Enhanced Inventory** – Enhanced inventory locations are potential contaminant source sites added by the water system. These can include new sites not captured during the primary contaminant inventory, or corrected locations for sites not properly located during the primary contaminant inventory. Enhanced inventory sites can also include miscellaneous sites added by the Idaho Department of Environmental Quality (DEQ) during the primary contaminant inventory.

**Floodplain** – This is a coverage of the 100year floodplains.

**Group 1 Sites** – These are sites that show elevated levels of contaminants and are not within the priority one areas.

**Inorganic Priority Area** – Priority one areas where greater than 25% of the wells/springs show constituents higher than primary standards or other health standards.

**Landfill** – Areas of open and closed municipal and non-municipal landfills.

**LUST (Leaking Underground Storage Tank)** – Potential contaminant source sites associated with leaking underground storage tanks as regulated under RCRA.

**Mines and Quarries** – Mines and quarries permitted through the Idaho Department of Lands.)

**Nitrate Priority Area** – Area where greater than 25% of wells/springs show nitrate values above 5mg/l.

**NPDES (National Pollutant Discharge Elimination System)** – Sites with NPDES permits. The Clean Water Act requires that any discharge of a pollutant to waters of the United States from a point source must be authorized by an NPDES permit.

**Organic Priority Areas** – These are any areas where greater than 25 % of wells/springs show levels greater than 1% of the primary standard or other health standards.

**Recharge Point** – This includes active, proposed, and possible recharge sites on the Snake River Plain.

**RICRIS** – Site regulated under **Resource Conservation Recovery Act (RCRA)**. RCRA is commonly associated with the cradle to grave management approach for generation, storage, and disposal of hazardous wastes.

**SARA Tier II (Superfund Amendments and Reauthorization Act Tier II Facilities)** – These sites store certain types and amounts of hazardous materials and must be identified under the Community Right to Know Act.

**Toxic Release Inventory (TRI)** – The toxic release inventory list was developed as part of the Emergency Planning and Community Right to Know (Community Right to Know) Act passed in 1986. The Community Right to Know Act requires the reporting of any release of a chemical found on the TRI list.

**UST (Underground Storage Tank)** – Potential contaminant source sites associated with underground storage tanks regulated as regulated under RCRA.

**Wastewater Land Applications Sites** – These are areas where the land application of municipal or industrial wastewater is permitted by DEQ.

**Wellheads** – These are drinking water well locations regulated under the Safe Drinking Water Act. They are not treated as potential contaminant sources.

**NOTE:** Many of the potential contaminant sources were located using a geocoding program where mailing addresses are used to locate a facility. Field verification of potential contaminant sources is an important element of an enhanced inventory.

Where possible, a list of potential contaminant sites unable to be located with geocoding will be provided to water systems to determine if the potential contaminant sources are located within the source water assessment area.

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# Attachment A

# Delineation Figures and Potential Contaminant Source Table for the Franklin Domestic Water Users

***FIGURE 1: Location of the Franklin Domestic Water Users***

***PWS# 4010064***

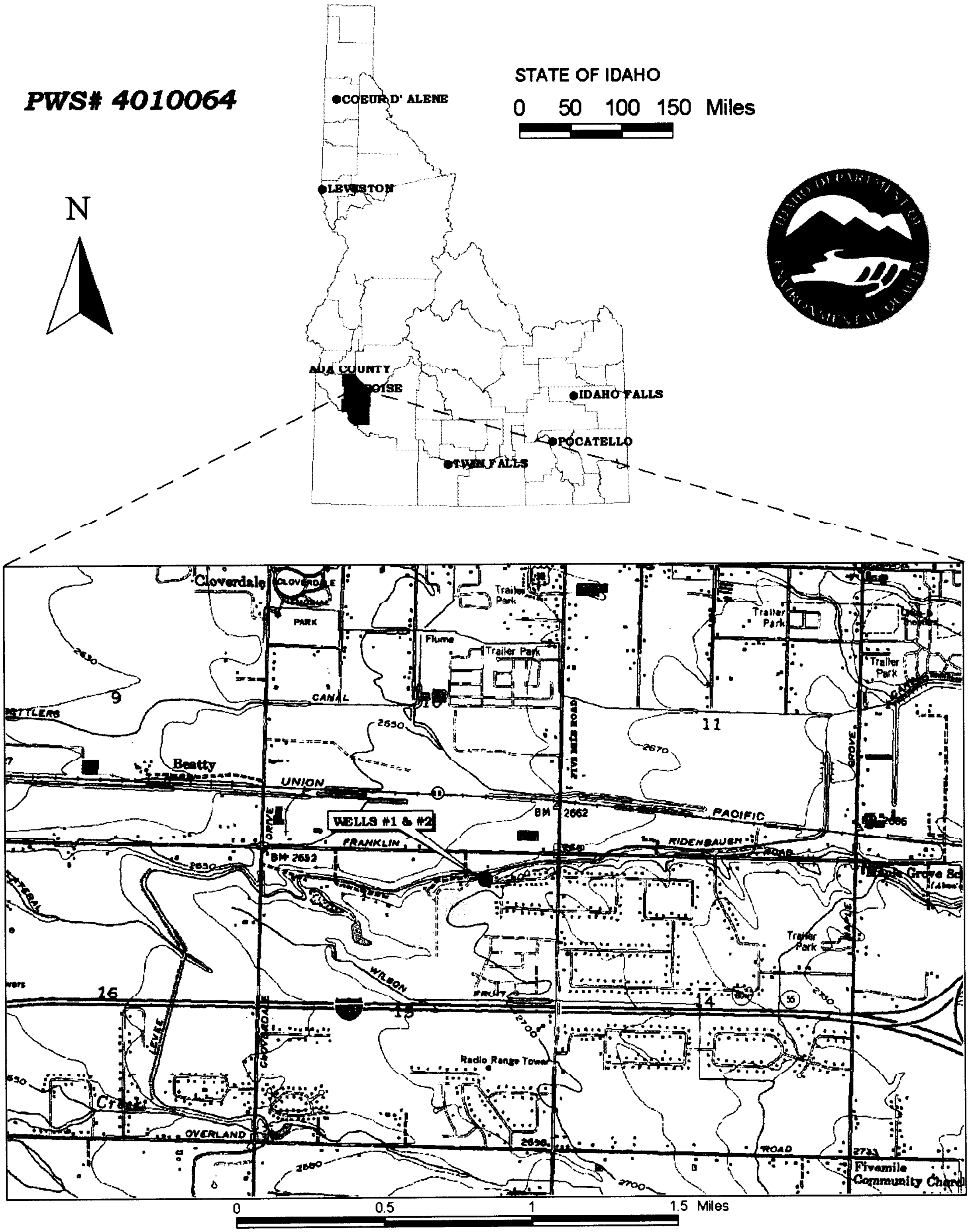
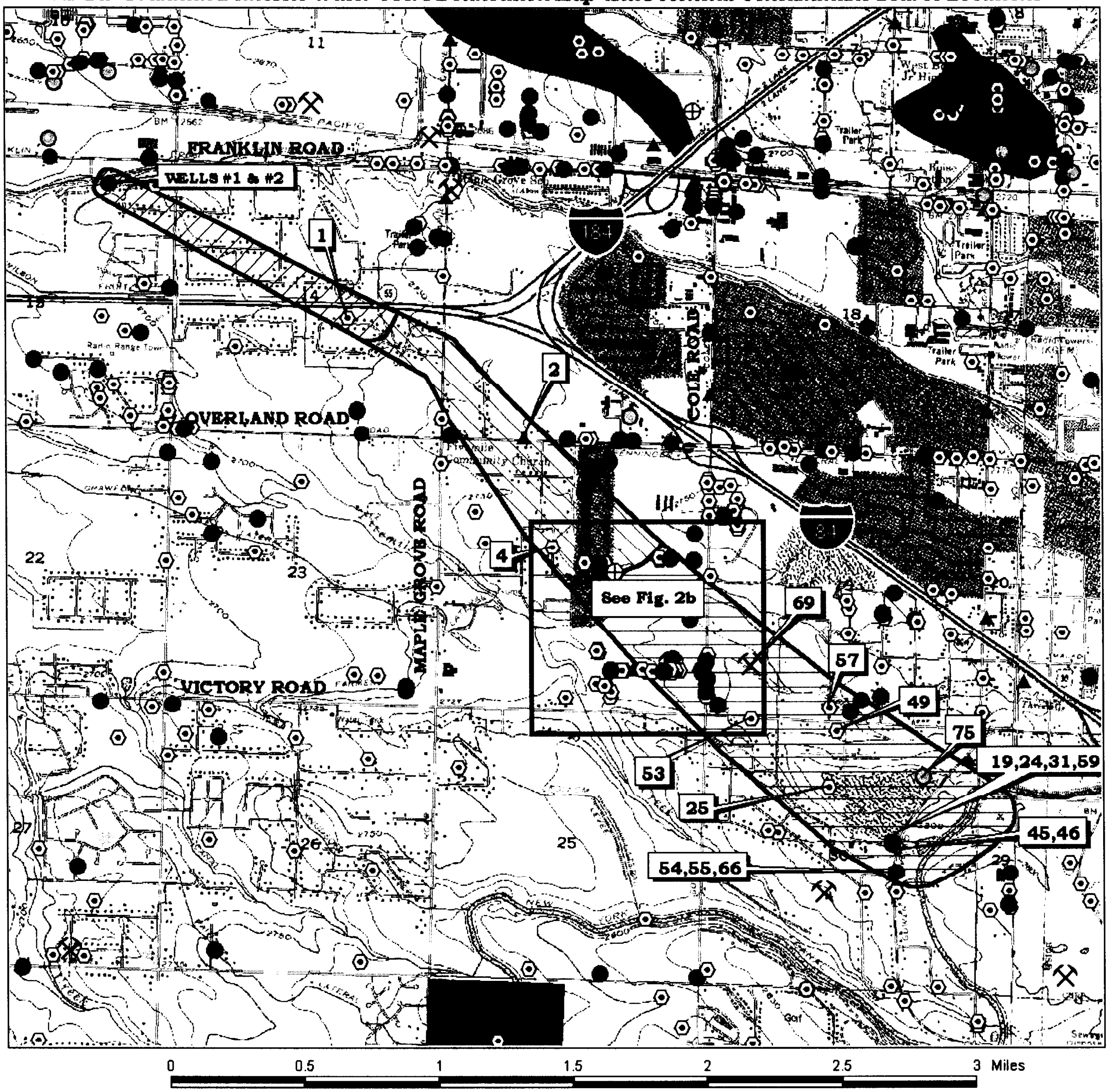


*FIGURE 2a - Franklin Domestic Water Users Delineation Map and Potential Contaminant Source Locations*




**LEGEND**

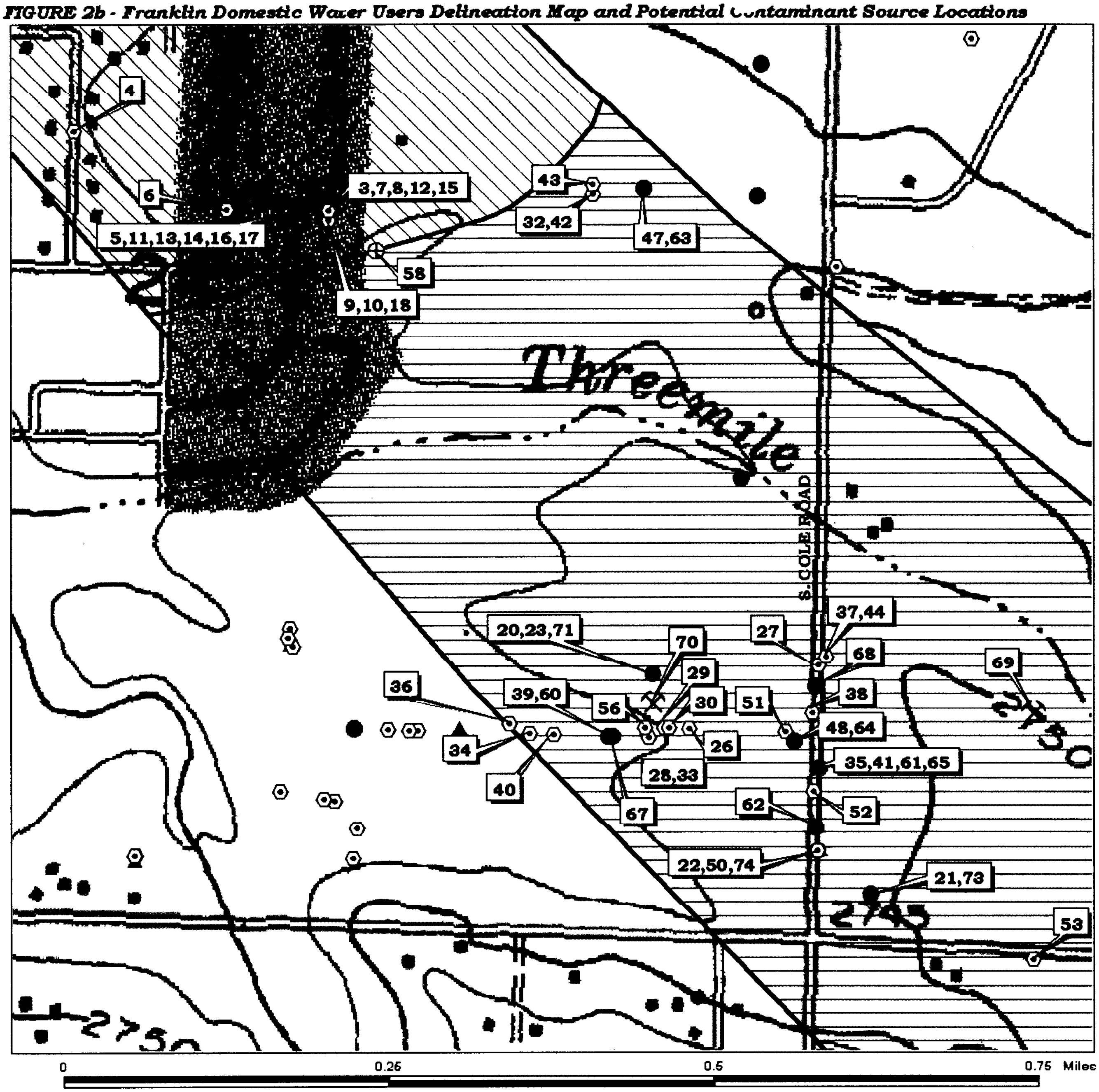
**Time of Travel Zones**
- 1B (3 yr TOT)
- 2 (6 yr TOT)
- 3 (10 yr TOT)
- Wellhead
- Enhanced Inventory
- Toxic Release Inventory
- CERCLIS Site
- RICRIS Site
- Business Mailing List
- Dairy
- LUST Site
- NPDES Site
- Mine
- AST

**UST Site**
- Closed
- Open
- Recharge Point
- SARA Title III Site (EPCRA)
- Injection Well
- Group1 Site
- Cyanide Site
- Landfill
- Wastewater Land App.Site

N

# PWS# 4010064
# WELLS #1 & #2

*FIGURE 2b - Franklin Domestic Water Users Delineation Map and Potential Contaminant Source Locations*




**LEGEND**

Time of Travel Zones
- 1B (3 yr TOT)
- 2 (6 yr TOT)
- 3 (10 yr TOT)
- Wellhead
- Enhanced Inventory
- Toxic Release Inventory
- CERCLIS Site
- RICRIS Site
- Business Mailing List
- Dairy
- LUST Site
- NPDES Site
- Mine
- AST

UST Site
- Closed
- Open

- Recharge Point
- SARA Title III Site (EPCRA)
- Injection Well
- Group1 Site
- Cyanide Site
- Landfill
- Wastewater Land App.Site

N

**PWS# 4010064**
**WELLS #1 & #2**

**Table 3. Franklin Domestic Water Users Potential Contaminant Inventory**
NOTE: The SITE # in this table corresponds to Figures 2a & 2b, pages 19 & 20.

| SITE # | Source Description[1] | TOT Zone[2] (years) | Source of Information | Potential Contaminants[3] |
|---|---|---|---|---|
| | Interstate 84 | 0-3 | GIS Map | IOC, VOC, SOC, Microbes |
| | Storm Drain/Sewer Line | 0-3 | GWUDI Field Survey | IOC, VOC, SOC, Microbes |
| 1 | Roofing Contractor | 0-3 | Business Mailing List | IOC, VOC, SOC |
| 2 | UST-Building Supply Company | 3-6 | Business Mailing List | VOC, SOC |
| 3 | Footwear Manufacturer | 3-6 | Business Mailing List | IOC, VOC, SOC |
| 4 | Wrecker Service | 3-6 | Business Mailing List | IOC, VOC, SOC |
| 5,13 | Sign Manufacturers | 3-6 | Business Mailing List | IOC, VOC |
| 6 | Material Handling Wholesale | 3-6 | Business Mailing List | None |
| 7 | Sewing Contractor | 3-6 | Business Mailing List | None |
| 8 | Delivery Service | 3-6 | Business Mailing List | VOC, SOC |
| 9 | Fire Department Equipment Store | 3-6 | Business Mailing List | IOC, VOC, SOC |
| 10,18 | SARA Site-Industrial Gases Also Welding Equipment and Supplies | 3-6 | Database Search | IOC, VOC, SOC |
| 11 | Trucking/Motor Freight Co. | 3-6 | Business Mailing List | VOC, SOC |
| 12 | Woodworkers | 3-6 | Business Mailing List | IOC, VOC, SOC |
| 14 | Carpet and Rug Cleaners | 3-6 | Business Mailing List | IOC, VOC |
| 15 | Freight Company | 3-6 | Business Mailing List | VOC, SOC |
| 16 | Window Cleaners | 3-6 | Business Mailing List | VOC |
| 17 | Drive Line Shop | 3-6 | Business Mailing List | IOC, VOC, SOC |
| 19,24,31, 59,72 | SARA Site/RCRIS Site/UST/LUST Contracting Company | 6-10 | Database Search | IOC, VOC, SOC |
| 20,23,71 | SARA Site & LUST/UST Oil Company | 6-10 | Database Search | IOC, VOC, SOC |
| 21,73 | SARA Site/UST Gas Station | 6-10 | Database Search | IOC, VOC, SOC |
| 22,50,74 | SARA Site/UST Gas Station | 6-10 | Database Search | IOC, VOC, SOC |
| 25 | Bathtub & Sink Refinishing | 6-10 | Business Mailing List | IOC, VOC, SOC |
| 26 | Freight Company | 6-10 | Business Mailing List | VOC, SOC |
| 27 | Material Handling Equipment Wholesale | 6-10 | Business Mailing List | None |
| 28,33 | Automobile Repair & Service Shop | 6-10 | Business Mailing List | IOC, VOC, SOC |
| 29 | Air Cargo Service | 6-10 | Business Mailing List | IOC, VOC, SOC |
| 30 | Trucking/Freight Company | 6-10 | Business Mailing List | VOC, SOC |
| 32 | Welding Shop | 6-10 | Business Mailing List | IOC, VOC, SOC |
| 34 | Wholesale Machine Tools | 6-10 | Business Mailing List | IOC |
| 35,41,65 | RCRIS Site-Freight Company | 6-10 | Database Search | IOC, VOC, SOC |
| 36 | General Contractor | 6-10 | Business Mailing List | IOC, VOC, SOC |
| 37 | Air Courier Service | 6-10 | Business Mailing List | IOC, VOC, SOC |
| 38 | Well Driller | 6-10 | Business Mailing List | IOC, VOC, SOC |
| 39 | Sewing Contractor | 6-10 | Business Mailing List | None |
| 40 | Sporting Goods Manufacturer | 6-10 | Business Mailing List | IOC, VOC, SOC |
| 42 | Machine Shop | 6-10 | Business Mailing List | IOC, VOC, SOC |
| 43 | Adhesives & Sealants Manufacturer | 6-10 | Business Mailing List | IOC, VOC, SOC |
| 44 | Storage-Household & Commercial | 6-10 | Business Mailing List | IOC, VOC, SOC |

| | | | | |
|---|---|---|---|---|
| 45,46 | Cabinet Manufacturer | 6-10 | Business Mailing List | IOC, VOC, SOC |
| 47 | Painters | 6-10 | Business Mailing List | IOC, VOC, SOC |
| 48,64 | RCRIS Site-Hydraulic Equipment & Supplies | 6-10 | Business Mailing List | IOC, VOC, SOC |
| 49 | Metal Building Manufacturer | 6-10 | Business Mailing List | IOC, VOC, SOC |
| 51 | Signs-Equipment & Supplies | 6-10 | Business Mailing List | IOC, VOC |
| 52 | Glass Blowers | 6-10 | Business Mailing List | IOC |
| 53 | Metal Building Manufacturer | 6-10 | Business Mailing List | IOC, VOC, SOC |
| 54,55,66 | RCRIS Site-Trucking & Wrecker Service | 6-10 | Database Search | IOC, VOC, SOC |
| 56 | Trucking/Freight Company | 6-10 | Business Mailing List | VOC, SOC |
| 57 | General Contractors | 6-10 | Business Mailing List | IOC, VOC, SOC |
| 58 | CERCLIS Site-Government Impact Area | 6-10 | Database Search | IOC, VOC, SOC |
| 60 | RCRIS Site | 6-10 | Database Search | IOC, VOC, SOC |
| 61 | RCRIS Site-Delivery/Assembly Company | 6-10 | Database Search | IOC, VOC, SOC |
| 62 | RCRIS Site | 6-10 | Database Search | IOC, VOC, SOC |
| 63 | RCRIS Site-Hardwood Floors | 6-10 | Database Search | IOC, VOC, SOC |
| 67 | RCRIS Site | 6-10 | Database Search | IOC, VOC, SOC |
| 68 | RCRIS Site | 6-10 | Database Search | IOC, VOC, SOC |
| 69 | Sand & Gravel Pit | 6-10 | Database Search | IOC, VOC, SOC |
| 70 | Sand & Gravel Pit | 6-10 | Database Search | IOC, VOC, SOC |
| 75 | AST-Diesel Fuel | 6-10 | Database Search | VOC, SOC |

**[1] See page 14 for definitions of CERCLIS Sites, RCRIS Sites, ASTs, USTs, etc.**
**[2] TOT = time-of-travel (in years) for a potential contaminant to reach the wellhead**
**[3] IOC = inorganic chemical, VOC = volatile organic chemical, SOC = synthetic organic chemical**

# Attachment B

# Franklin Domestic Water Users Susceptibility Analysis Worksheets

The final scores for the susceptibility analysis were determined using the following formulas:

1) VOC/SOC/IOC Final Score = Hydrologic Sensitivity + System Construction + (Potential Contaminant/Land Use x 0.2)

2) 2) Microbial Final Score = Hydrologic Sensitivity + System Construction + (Potential Contaminant/Land Use x 0.375)

Final Susceptibility Scoring:

0 - 5 Low Susceptibility

6 - 12 Moderate Susceptibility

≥ 13 High Susceptibility

Ground Water Susceptibility Report — Public Water System Name : FRANKLIN DOMESTIC WATER USERS — Public Water System Number 4010064 — Well# : WELL #1 — 11/20/01 2:53:59 PM

## 1. System Construction

| | | SCORE |
|---|---|---|
| Drill Date | 12/1/81 | |
| Driller Log Available | YES | |
| Sanitary Survey (if yes, indicate date of last survey) | YES | 1999 |
| Well meets IDWR construction standards | NO | 1 |
| Wellhead and surface seal maintained | YES | 0 |
| Casing and annular seal extend to low permeability unit | YES | 0 |
| Highest production 100 feet below static water level | NO | 1 |
| Well located outside the 100 year flood plain | YES | 0 |
| Total System Construction Score | | 2 |

## 2. Hydrologic Sensitivity

| | | |
|---|---|---|
| Soils are poorly to moderately drained | NO | 2 |
| Vadose zone composed of gravel, fractured rock or unknown | YES | 1 |
| Depth to first water > 300 feet | NO | 1 |
| Aquitard present with > 50 feet cumulative thickness | NO | 2 |
| Total Hydrologic Score | | 6 |

## 3. Potential Contaminant / Land Use - ZONE 1A

| | | IOC Score | VOC Score | SOC Score | Microbial Score |
|---|---|---|---|---|---|
| Land Use Zone 1A | URBAN/COMMERCIAL | 2 | 2 | 2 | 2 |
| Farm chemical use high | NO | 0 | 0 | 0 | |
| IOC, VOC, SOC, or Microbial sources in Zone 1A | NO | NO | NO | NO | NO |
| Total Potential Contaminant Source/Land Use Score - Zone 1A | | 2 | 2 | 2 | 2 |
| **Potential Contaminant / Land Use - ZONE 1B** | | | | | |
| Contaminant sources present (Number of Sources) | YES | 3 | 3 | 3 | 2 |
| (Score = # Sources X 2 ) 8 Points Maximum | | 6 | 6 | 6 | 4 |
| Sources of Class II or III leacheable contaminants or | YES | 2 | 2 | 2 | |
| 4 Points Maximum | | 2 | 2 | 2 | |
| Zone 1B contains or intercepts a Group 1 Area | YES | 2 | 0 | 2 | 0 |
| Land use Zone 1B | Less Than 25% Agricultural Land | 0 | 0 | 0 | 0 |
| Total Potential Contaminant Source / Land Use Score - Zone 1B | | 10 | 8 | 10 | 4 |
| **Potential Contaminant / Land Use - ZONE II** | | | | | |
| Contaminant Sources Present | YES | 2 | 2 | 2 | |
| Sources of Class II or III leacheable contaminants or | YES | 0 | 1 | 0 | |
| Land Use Zone II | Less than 25% Agricultural Land | 0 | 0 | 0 | |
| Potential Contaminant Source / Land Use Score - Zone II | | 2 | 3 | 2 | 0 |
| **Potential Contaminant / Land Use - ZONE III** | | | | | |
| Contaminant Source Present | YES | 1 | 1 | 1 | |
| Sources of Class II or III leacheable contaminants or | YES | 1 | 1 | 0 | |
| Is there irrigated agricultural lands that occupy > 50% of | NO | 0 | 0 | 0 | |
| Total Potential Contaminant Source / Land Use Score - Zone III | | 2 | 2 | 1 | 0 |
| Cumulative Potential Contaminant / Land Use Score | | 16 | 15 | 15 | 6 |
| **4. Final Susceptibility Source Score** | | 11 | 11 | 11 | 10 |
| **5. Final Well Ranking** | | Moderate | Moderate | Moderate | Moderate |

Ground Water Susceptibility Report | Public Water System Name : FRANKLIN DOMESTIC WATER USERS | Public Water System Number 4010064 | Well# : WELL #2 | 1/2/02 11:42:56 AM

| | | SCORE | | | |
|---|---|---|---|---|---|
| **1. System Construction** | | | | | |
| Drill Date | UNKNOWN | | | | |
| Driller Log Available | NO | | | | |
| Sanitary Survey (if yes, indicate date of last survey) | YES | 1999 | | | |
| Well meets IDWR construction standards | NO | 1 | | | |
| Wellhead and surface seal maintained | YES | 0 | | | |
| Casing and annular seal extend to low permeability unit | NO | 2 | | | |
| Highest production 100 feet below static water level | NO | 1 | | | |
| Well located outside the 100 year flood plain | YES | 0 | | | |
| Total System Construction Score | | 4 | | | |
| **2. Hydrologic Sensitivity** | | | | | |
| Soils are poorly to moderately drained | NO | 2 | | | |
| Vadose zone composed of gravel, fractured rock or unknown | YES | 1 | | | |
| Depth to first water > 300 feet | NO | 1 | | | |
| Aquitard present with > 50 feet cumulative thickness | NO | 2 | | | |
| Total Hydrologic Score | | 6 | | | |
| **3. Potential Contaminant / Land Use - ZONE 1A** | | IOC Score | VOC Score | SOC Score | Microbial Score |
| Land Use Zone 1A | URBAN/COMMERCIAL | 2 | 2 | 2 | 2 |
| Farm chemical use high | NO | 0 | 0 | 0 | |
| IOC, VOC, SOC, or Microbial sources in Zone 1A | NO | NO | NO | NO | NO |
| Total Potential Contaminant Source/Land Use Score - Zone 1A | | 2 | 2 | 2 | 2 |
| **Potential Contaminant / Land Use - ZONE 1B** | | | | | |
| Contaminant sources present (Number of Sources) | YES | 3 | 3 | 3 | 2 |
| (Score = # Sources X 2 ) 8 Points Maximum | | 6 | 6 | 6 | 4 |
| Sources of Class II or III leacheable contaminants or | YES | 2 | 2 | 2 | |
| 4 Points Maximum | | 2 | 2 | 2 | |
| Zone 1B contains or intercepts a Group 1 Area | YES | 2 | 0 | 2 | 0 |
| Land use Zone 1B | Less Than 25% Agricultural Land | 0 | 0 | 0 | 0 |
| Total Potential Contaminant Source / Land Use Score - Zone 1B | | 10 | 8 | 10 | 4 |
| **Potential Contaminant / Land Use - ZONE II** | | | | | |
| Contaminant Sources Present | YES | 2 | 2 | 2 | |
| Sources of Class II or III leacheable contaminants or | YES | 0 | 1 | 0 | |
| Land Use Zone II | Less than 25% Agricultural Land | 0 | 0 | 0 | |
| Potential Contaminant Source / Land Use Score - Zone II | | 2 | 3 | 2 | 0 |
| **Potential Contaminant / Land Use - ZONE III** | | | | | |
| Contaminant Source Present | YES | 1 | 1 | 1 | |
| Sources of Class II or III leacheable contaminants or | YES | 1 | 1 | 0 | |
| Is there irrigated agricultural lands that occupy > 50% of | NO | 0 | 0 | 0 | |
| Total Potential Contaminant Source / Land Use Score - Zone III | | 2 | 2 | 1 | 0 |
| Cumulative Potential Contaminant / Land Use Score | | 16 | 15 | 15 | 6 |
| **4. Final Susceptibility Source Score** | | 13 | 13 | 13 | 12 |
| **5. Final Well Ranking** | | High | High | High | Moderate |